

**Abstract of the Disclosure**

To provide a cross-flow fan that is ideal for use in an excimer laser device or fluoride laser device that is capable of high-speed rotation, that has high mechanical strength even at high-speed rotation and that does not suffer deformation, a rotating shaft is mounted passing through the center of cross-flow fan for a discharge excitation gas laser device. Use of the rotating shaft facilitates alignment of the rotating shaft and high-speed rotation is possible because the mechanical strength is raised. Furthermore, magnetic bearings can be used since misalignment does not develop. The flow velocity is not adversely affected even if a rotating shaft, as noted above, is utilized since a cross-flow fan for gas circulation in an excimer laser device is used under high-head, low-flow velocity conditions. Deformation due to shaft weight can be reduced since the weight of the rotating shaft can be lowered by providing a hollow section within the rotating shaft, and that increases the inherent oscillation frequency which permits still higher speeds.

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